

REPORT OF RCRA COMPLIANCE INSPECTION

AT

ASARCO INCORPORATED  
OMAHA, NEBRASKA

EPA ID NUMBER: NED007257413

MARCH 28-29, 1991

BY

U.S. ENVIRONMENTAL PROTECTION AGENCY  
Region VII  
Environmental Services Division

INTRODUCTION

At the request of the Waste Management Division (WSTM), a RCRA compliance evaluation was conducted at Asarco Incorporated at Omaha, Nebraska on March 28-29, 1991. The inspection was conducted under the authority of Section 3007 of the Resource Conservation and Recovery Act (RCRA), as amended. This narrative report and attachments present the results of the inspection.

PARTICIPANTS

Asarco Incorporated (Asarco):

Eldon R. Lindstrom, Technical Services Manager  
Chuck Coffey, Environmental Technician

Nebraska Department of Environmental Control (NDEC):

Joe Harris, Hazardous Waste Specialist

U.S. Environmental Protection Agency (EPA):

Robert Webber, Environmental Engineer

INSPECTION PROCEDURES

Upon arrival at the facility, the inspectors contacted Messrs. Lindstrom and Coffey who acted as facility representatives throughout the inspection. I presented them with my credentials and explained the purpose of the inspection and the procedures that I would follow.

The inspection consisted of a discussion of facility operations, waste generation and waste management practices, a visual inspection of waste management areas, and a review of hazardous waste management records. At the end of the inspection, a Confidentiality Notice was provided to and signed by Mr. Lindstrom. A copy of this document is provided as Attachment 1. During the inspection, copies of records were obtained. A copy of the document receipt furnished to Mr. Lindstrom is provided as Attachment 2. At the conclusion of the inspection I reviewed my findings with the facility representatives. Because no apparent violations were observed, a Notice of Violation was not issued to the facility.

### FACILITY DESCRIPTION

Asarco conducts numerous refining processes as described in the Attached process diagrams (Attachment 3). Although not mutually exclusive, the processes are categorized by the following departments:

- Lead Refining Dept.
- Residue Dept.
- Doré Dept.
- Bismuth Dept.
- Antimony Oxide Dept.

A facility blue print is included in Attachment 4. The plant operates 24 hours a day, seven days a week. There are roughly 225 employees. The following is a brief discussion of each of the departments and the secondary materials generated at the facility.

#### Refining Dept.

Over 90% of what Asarco processes is lead bullion (96% pure) in 10 ton sows (Photo 1) from the Asarco primary lead smelter in Helena Montana. The bullion is first melted in a pre-melt kettle. From the pre-melt kettle the bullion is charged to the softener furnace (Photos 4 & 5). The softener furnace is charged nine times each week with 240 tons of material.

In addition to 6,000 tons/month of lead bullion from the Asarco East Helena, Montana primary lead smelter, the following materials from off-site sources (Photo 2) are also processed in the Refinery Department:

- 400-500 tons/month blocks of lead (98%) from Gopher, Minnesota secondary lead smelter.

- 100 tons/month of miscellaneous drosses and scrap (40-81% lead) from the following sources:

- Jersey Miniere, NJ (81% assay);
- Acme Steel Co., Riverdale, Illinois (66% assay);
- Specialty Metals, St. Louis (no assay available; last received 3 or 4 months ago; negotiating contract);
- Asarco, Tacoma, Washington (copper mine; now closed)
- Gould Remediation Project, Omaha, Nebraska (in 1989 only; 60 tons total)

Attachment 5 shows assay results received at the facility for the Helena, Gopher, and Jersey Miniere materials. Attachment 6 includes information obtained from NDEC files related to the use of Acme Steel Lead Dross as a feedstock.

The molten bullion from the softener furnace is introduced to various kettles in the refinery building where tellurium, copper, silver, zinc, and bismuth are removed. After the above metals are removed, the product is charged into the final refining kettle. From there the product is molded in various sized bars (Photos 6 & 7) and sows (Photos 8 & 9) and shipped out as 99.9% pure lead.

The Refinery Dept. consists of two softening furnaces, 18 refining kettles and three bismuth kettles. All refining facilities, with the exception of the three bismuth kettles are located in the refining building. The three bismuth kettles are in the Bismuth Dept. building. The softening furnaces, kettle 4, kettle 8, the Debris Dross kettle, and the Slag kettle are vented to the softener baghouse. The facility is planning to vent kettle 9 in the near future.

The following drosses and skims from the softening furnaces and refinery kettles are introduced into other departments:

Softener skims	-> Residue Dept.
Copper dross	-> Residue Dept.
Silver dross	-> Doré Dept.
Refining skims	-> Residue Dept.
Bismuth dross	-> Bismuth Dept.
Scavenger dross	-> Residue Dept.
Liquation skims	-> Residue Dept.

A Tellurium Slag is generated from a sodium detellurizing operation, whereby the softened bullion is treated with a combination of NaOH and Na to remove Te to less than 0.005%. The Na<sub>2</sub>Te slag produced is skimmed and is readily amenable to subsequent treatment to recover Te. Approximately 125 tons per year of tellurium slag is generated and shipped to the Asarco facility in Amarillo, Texas for material recovery (see assay in Attachment 7).

### Residue Dept.

Also referred to as the Antimony Dept., the Residue Dept. is made up of the reverb furnace (Photos 13 & 17), the cupola furnace (Photo 15), residue kettles (Photo 14), and three antimony/lead kettles. All baghouse dust, copper dross, scavenger dross, and refining skims are charged to the reverb. Softener skims, iron, sand, and coke are charged to the cupola. There are two baghouses associated with the Residue Dept. The north (smelter) baghouse (Photo 20) vents process gases from the cupola and reverb. The residue ventilation baghouse handles hood ventilation gas from the cupola and reverb.

All baghouse dusts generated at the facility are stored in piles within the large fume bin building (Photo 16) located at the north end of the Residue Dept. prior to being introduced into the reverb furnace. Both molasses and ethylene glycol (Photo 21) are used for dust suppression at the facility.

The following is a list of the seven sources of baghouse dusts and the estimated amount generated (out of a total of 1800 tons/year total):

- Softening baghouse (1,000 tons/year);
- North (Smelter) baghouse (600 tons/year);
- Residue ventilation baghouse (40 tons/year);
- Antimony baghouse (40 tons/year);
- Doré (Retort) baghouse (40 tons/year);
- Intermittent offgrade baghouse (40 tons/year);
- Continuous offgrade baghouse (40 tons/year).

The latter two sources are from the Antimony Oxide Dept. skimming hoods. Assay results for the baghouse dusts are shown in Attachment 8.

Both the cupola and reverb furnaces generate slags.

Silica Slag from the cupola furnace passes the EP, but fails the TCLP for lead (Attachment 9). It is currently disposed of at the Landfill Resources facility in Omaha, Nebraska. Approximately 4,600 tons of silica slag from the cupola furnace was generated in both 1989 and 1990.

Reverb Furnace Slag fails both the EP and TCLP (Attachment 9). It is currently stored on-site, but has previously been disposed of at the Douglas County Landfill. An estimated 1,400 tons of reverb furnace slag was generated in both 1989 and 1990. A rough sketch, obtained from the facility, showing the storage locations of reverb slag is shown in Attachment 10.

### Doré Dept.

Within the past year three cupels and 15 retorts have been replaced with four liquation kettles. The new Doré process used for silver and gold refining is reportedly more efficient and creates less air emissions. Liquation slag (Photo 18) is introduced to the Residue Dept. reverb furnace. Lead and zinc are removed from silver dross in a vacuum electric induction retort (75% silver obtained) and a bottom blown oxygen cupel (100% silver obtained). Both zinc and lead slag generated from the Doré process are introduced back to the Refining Dept.

### Bismuth Dept.

The bismuth process consists of five bismuth kettles in the refinery building and three kettles located in the Bismuth Dept. building. Bismuth is removed in increasing concentrations in the dross from each kettle. It is brought to the Bismuth Dept. building from the refinery at approximately 6-10% bismuth. Chlorine is fed to the bismuth kettle, producing lead chloride. The remaining material is close to pure bismuth. Refined bismuth is used in the pharmaceutical and semiconductor industries.

Lead chloride slag is introduced into the exchange kettle at the Refining Dept. where calcium and magnesium replace lead in the mixture. The resulting Calcium Slag (also called Exchange Slag) is either disposed of at Landfill Resources Facility in Omaha (for 80% that passes EP), or stored on-site (for 20% that fails EP - Photo 10). Attachment 9 shows a recent analysis of calcium slag. A total of 205 tons in 1989 and 1,200 tons in 1990 were generated. The calcium slag has previously been disposed of at the Douglas County Landfill. In addition, a total of four shipments (totaling 350 tons) were made to Encycle Inc. in Corpus Christie, Texas (reportedly for lead reclamation).

Caustic Skims generated from the Bismuth kettles (Photos 11 & 12) are returned to the pre-melt kettle at the Refining Dept.

### Antimony Oxide Dept.

As noted in Attachment 2, both antimony crystals from the Residue Dept. (Photo 3) and purchased antimony are used to produce antimony oxide. The antimony oxide is sold as an additive in fire resistant clothing. There are three grades of antimony oxide produced: low tint, high tint, and very high tint. The slag and skimmings from this department are introduced into the Residue Dept.

## Facility-Wide/Miscellaneous Secondary Materials

1. Spent Refractory Brick - An estimated 250 tons/year of spent refractory brick are generated from the various furnaces. Roughly 50 tons/year comes from the Doré Process and goes to a copper smelter for material recovery.

The other 200 tons/year has been shown to fail both EP and TCLP for lead, and is stored on-site in piles at two locations. One location is in an unfenced area at the north end of plant, on property leased by Union Pacific (Photo 19). The other storage location is outside the flood wall on the east side of the plant near the softener baghouse (Photo 24). Disposal of the lead contaminated brick at the Douglas County Landfill was stopped in Fall 1989. There is a reported 200 tons currently stored on-site. According to Mr. Lindstrom, the facility will consider the bricks hazardous waste on July 1, 1991, if NDEC adopts the current federal mining waste exclusion regulations.

2. Spent Petroleum Naphtha Parts Washing Solvent (D001) - A total of less than 100 kilograms/month of this waste is serviced by Safety-Kleen at the facility. Each of the following shops have a parts washer:

- Machine Shop;
- Vehicle Maintenance Shop; and
- Pipefitter Shop.

3. Waste Oil - Various used motor and hydraulic oils are generated from the servicing of a fleet of 60 to 70 plant vehicles. The vehicles include a large backhoe, three cranes, six scooters, two cherry pickers, a dust control spray truck, fifteen forklifts, three front-end loaders, one pickup truck, two dump trucks, road sweepers, and six crash carts. Roughly eight 55-gallon drums/year are generated and sent to Capital Oil in Omaha for recycling.

4. Process/Cooling Wastewaters/Sludges - Approximately 550,000 gallons per day of contact and noncontact wastewaters are generated from a wide variety of refining and equipment cleaning processes. These wastewaters, along with stormwater runoff, are discharged (Photos 22 & 23) to the Missouri River. The facility applied to NDEC for an NPDES permit in 1983 or 1984, and submitted monitoring data in December 1989. The wastewater monitoring data was not reviewed during the inspection. The January 23, 1990 Federal Register regulations that eliminate the mining waste exclusion for process wastewater from primary lead processing has not yet been adopted by NDEC. A small settling tank/sump associated with the discharge to the Missouri River generates an estimated 55 gallons of sludge every six months. This sludge is introduced into Residue Dept. reverb furnace.

## FINDINGS AND OBSERVATIONS

Asarco's most recent Notification of HW Activity submitted to NDEC (Attachment 12), dated 4/7/89, states that the facility is a conditionally-exempt small quantity generator of a D001 solvent and a burner of off-specification used oil fuel. Based on my observations and discussions with facility representatives, the facility no longer burners used oil on-site (the oil is shipped off-site for recycling), and continues to generate the D001 solvent at less than 100 kilograms per month.

Although the facility generates numerous other secondary materials, each of these materials appear to be currently excluded under the mining waste exclusion (e.g. the slags appear to be from primary lead processing), and/or recycled back into the refining process (e.g. baghouse dusts). Recent correspondence obtained from NDEC files related to the current disposal practices of slags and spent refractory bricks at Asarco are included in Attachment 13.

When effective in Nebraska, the September 1, 1989 FR final rule will eliminate the spent refractory bricks (exhibiting toxicity characteristic) from the mining waste exclusion. In addition, when effective in Nebraska, the January 23, 1990 FR final rule will eliminate the process wastewaters (associated with primary lead processing) from the mining waste exclusion.

The dust from the north baghouse is no longer being shipped to the ASARCO primary lead smelter in East Helena, Montana. According to Mr. Lindstrom, shipments of this waste were stopped in 1983 or 1984 due to a decrease in plant production and generation of this dust. Mr. Lindstrom indicated that this reduction was brought about because bullion is no longer received from the closed Asarco primary lead smelter in El Paso, Texas (the El Paso facility continues to operate only as a copper smelter). Currently, the north baghouse dust is stored in the fume bin along with all other baghouse dust and returned to the reverb furnace.

Robert F. Webber  
Robert F. Webber  
Environmental Engineer  
Date: 4/24/91  
Activity Number: ARF99

John W. Bosky  
John W. Bosky  
Chief, RCRA Monitoring Section  
Date: 4/25/91

**Attachments:**

1. Confidentiality Notice (3 pages)
  2. Receipt for Documents (1 page)
  3. Process Diagrams (4 pages)
  4. Facility Blueprint (1 page)
  5. Assay Results for Helena, Gopher, and Jersey Miniere materials (3 pages)
  6. Information from NDEC files related to use of Acme Steel Dross as a feedstock (17 pages)
  7. Assay Results for Tellurium Slag (1 page)
  8. Assay Results for Baghouse Dusts (6 pages)
  9. Waste Analysis Results for Slags (4 pages)
  10. Slag Inventory Sketch (1 page)
  11. Waste Analysis Results for Spent Refractory Brick (2 pages)
  12. Notification of HW Activity/Correspondence from NDEC files (7 pages)
  13. NDEC/Asarco correspondence on disposal of slags and spent refractory bricks (4 pages)
- Photographs (8 pages/24 photos)



Attachment 1  
(3 pages)

U.S. ENVIRONMENTAL PROTECTION AGENCY  
RCRA INSPECTION  
CONFIDENTIALITY NOTICE

Name and Address of Inspector(s)  Robert F. Webber  U.S. EPA, Region VII ENSV Division 25 Funston Road Kansas City, Kansas 66115	Name and Address of Facility ASARCO, Inc. 500 Douglas St. Omaha, Neb. 68102	
	Owner, Operator, or Agent in Charge Eldon Lindstrom	
	Title Technical Services Manager	
	Address	
Name of Individual to Whom Notice Given Eldon Lindstrom	Title	Date 3/29/91

It is possible that EPA will receive public requests for release of the information obtained during inspection of the facility above. Such requests will be handled by EPA in accordance with provisions of the Freedom of Information Act (FOIA), 5 U.S.C. 552; EPA regulations issued thereunder, 40 CFR Part 2; and the Resource Conservation and Recovery Act, Section 3007, as amended. EPA is required to make inspection data available in response to FOIA requests, unless the Administrator of the Agency determines that the data contains information entitled to confidential treatment.

Any or all of the information collected by EPA during the inspection may be claimed confidential, if it relates to trade secrets or commercial of financial matters that you consider to be confidential. If you make claims of confidentiality, EPA will disclose the information only to the extent, and by the means of the procedures set forth in the regulations (cited above) governing EPA's treatment of confidential information. Among other things, the regulations require that the EPA notify you in advance of publicly disclosing any information you have claimed and certified confidential.

To claim information confidential, you must certify that each claimed item meets all of the following criteria:

1. Your company has taken measures to protect the confidentiality of the information, and it intends to continue to take such measures.
2. The information is not, and has not been, reasonably obtained without your company's consent by other persons (other than governmental bodies) by use of legitimate means (other than discovery based on a showing of special need in a judicial or quasi-judicial proceeding).
3. The information is not publicly available elsewhere.
4. Disclosure of the information would cause substantial harm to your company's competitive position.

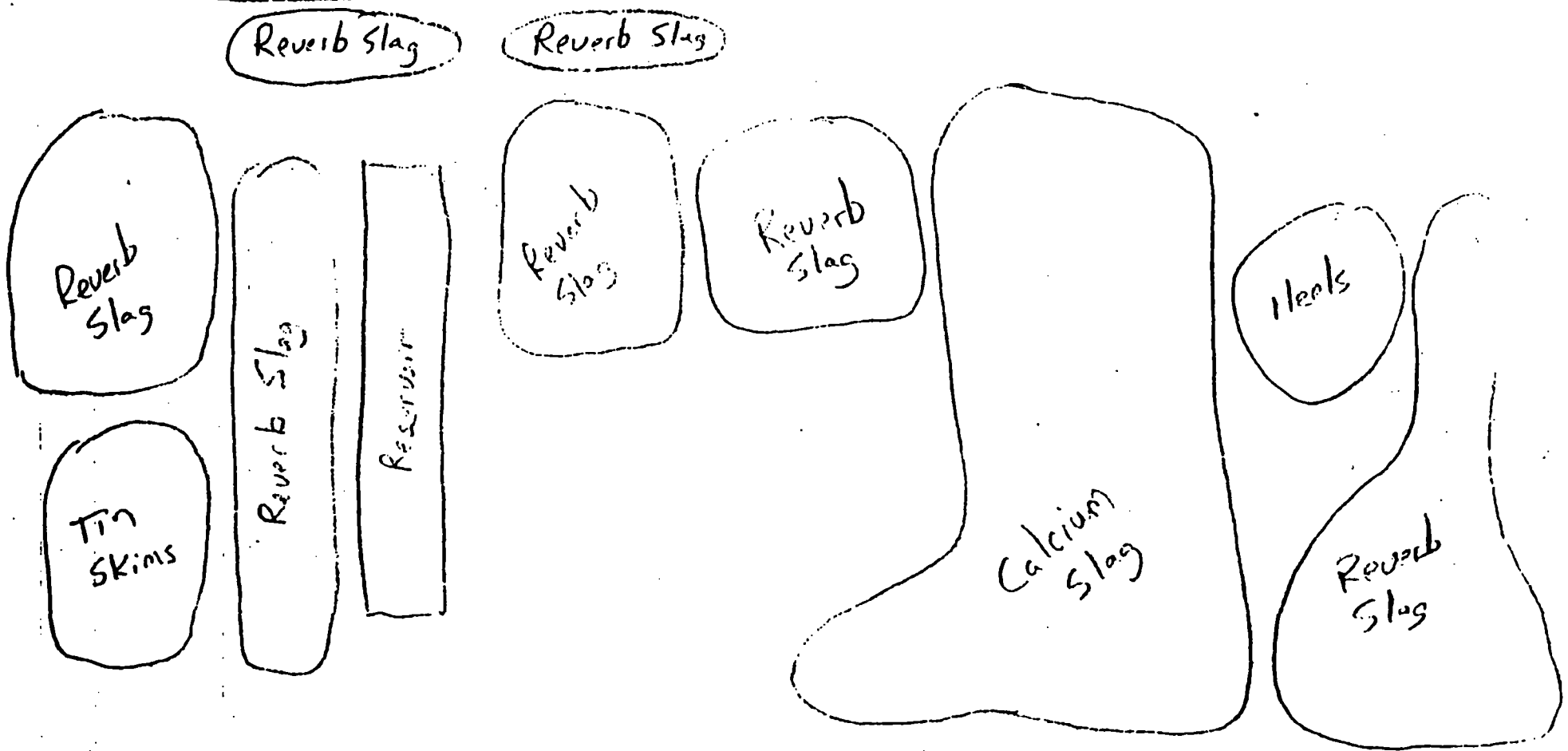
At the completion of the inspection, you will be given a receipt for all documents, samples, and other materials collected. At that time you may make claims that some or all of the information is confidential and meets the four criteria listed above.

3-21-91

Bricks

Floodwall

Attachment 10  
(page)



	Pile 11 2 comp	Ba	Ag	Pb				As				Cd	Cr			Se	Pb
ory Brick	Course Medial	<.20	<.050	20				.45				.036	<.10			<.10	9.9
P. Tox (ppm)		<.20	<.050	2.4				.51				<.050	<.10			<.10	
312 (ppm)		<.20	<.050	<u>76</u>				.94				.079	<.10			<.10	9.8
CLP (ppm)																	
ssay (%)			-	-	-	-	-	-	-	-	-					-	

(2 pages)

Attachment 11

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# ASARCO

PERA - E.P. 100  
Analytical Results ERL  
Attachment 2

## Technical Services Center

M.O. Varner  
Director

D.E. Holt  
Engineering Manager

D.A. Robbins  
Environmental Sciences Manager

M.G. King  
Research Manager

December 3, 1990  
OM.3.2

Mr. Chuck Coffey  
Omaha Plant

Please find attached the analytical results for the slag samples dated 11/13/90.

The samples were handled and analyzed in accordance with EPA approved methods 1312, EP Toxicity and Total Characteristic Leach procedures.

The following table reflects those parameters that exceed the EPA toxicity and/or corrosivity limits:

Sample	EP Toxicity Leach	Pb	Se	As
90-7080	Refractory Brick Fines	108.		
7083	Refractory Brick Coarse	20.		
7086	Calcium Discard Slag	690.		
7089	Reverb Discard Slag		8.5	535.
7095	Cupola Slag	18.		
	TCLP			
90-7079	Refractory Fines Brick	75.		
7082	Refractory Brick Coarse	76.		
7085	Calcium Discard Slag	995.		
7088	Reverb Discard Slag		7.0	565.
7094	Cupola Slag	43.		5.2

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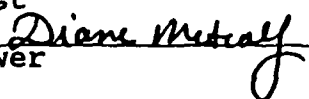
RECEIVED

DEC 7 1990

ASARCO Incorporated  
Department of Environmental Sciences  
OMAHA  
Miscellaneous Sample Results

ASARCO LAB #	SAMPLE DESCRIPTION	1990 SAMPLE DATE	Ag ppm	As ppm	Ba ppm	Cd ppm	Cr ppm	Hg ppb
6006	Reverb Discard Slag (Hi Ag) E.P. Tox.	10/12	<.050	384.	<.20	7.0	<.10	<.50
6007	Reverb Discard Slag (Hi Ag) TCLP	10/12	<.050	480.	<.20	8.5	<.10	<.50
6008	Reverb Brick Pile #1, E.P. Tox.	10/ 1	<.050	5.7	<.20	.14	<.10	<.50
6009	Reverb Brick Pile #1, TCLP	10/ 1	<.050	1.2	.61	.16	<.10	<.50
6010	Reverb Brick Pile #2, E.P. Tox.	10/ 1	<.050	.21	<.20	<.050	<.10	<.50
6011	Reverb Brick Pile #2, TCLP	10/ 1	<.050	3.3	<.20	.070	<.10	<.50

ASARCO LAB #	SAMPLE DESCRIPTION	1990 SAMPLE DATE	Pb ppm	Sb ppm	Se ppm	pH
6006	Reverb Discard Slag (Hi Ag) E.P. Tox.	10/12	.19	61.	13.	13.
6007	Reverb Discard Slag (Hi Ag) TCLP	10/12	.30	135.	13.	13.?
6008	Reverb Brick Pile #1, E.P. Tox.	10/ 1	1.4	.39	<.10	10.
6009	Reverb Brick Pile #1, TCLP	10/ 1	22.	.56	<.10	10.
6010	Reverb Brick Pile #2, E.P. Tox.	10/ 1	9.5	.90	<.10	6.6
6011	Reverb Brick Pile #2, TCLP	10/ 1	397.	8.7	<.10	6.6

  
 Analyst  
  
 Reviewer